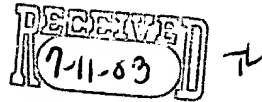


Official

AMENDMENT UNDER 37 C.F.R. § 1.116
APPLICATION NO. 09/197,643
ATTORNEY DOCKET NO. Q52377



IN THE CLAIMS:

1. (Not Entered) An image processing apparatus performing image processing on image data consisting of dot-matrixed pixels, each of the dot-matrixed pixels having color element data from all the element colors, the dot-matrixed pixels being output from an input device which generates the image data by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in a nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said apparatus comprising:

a color-blur pixel detection unit detecting a color blur pixel in said image data; and

an image processing unit performing image processing on pixels, each of the pixels having data from all the element colors, the pixels being within a predetermined range having said detected color blur pixel as a reference pixel, so as to reduce a color blur.

2. (Original) The image processing apparatus according to claim 1, wherein said color-blur pixel detection unit detects said color blur pixel based on change rate of element color intensity for a low-density color filter, between closely adjacent pixels.

3. (Original) The image processing apparatus according to claim 2, wherein said color-blur pixel detection unit detects said color blur pixel based on the change rate of difference between a reference element color intensity and the element color intensity for a low-density color filter, between adjacent pixels.

4. (Original) The image processing apparatus according to claim 3, wherein if there are a plurality of low-density color filters, said color-blur pixel detection unit detects said color blur

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pixel based on the change rate of difference between element color intensities for the low-density color filters between adjacent pixels.

5. (Original) The image processing apparatus according to claim 2, wherein said color-blur pixel detection unit detects said color blur pixel based on said change rate between adjacent low-density pixels.

6. (Original) The image processing apparatus according to claim 1, wherein said image processing unit performs smoothing processing on color difference components, obtained by subtracting luminance components from element color components of the pixels within the predetermined range having said color blur pixel as the reference pixel, and returns the smoothing processed components to the initial element color components.

7. (Original) The image processing apparatus according to claim 6, wherein said image processing unit performs edge enhancement processing.

8. (Original) The image processing apparatus according to claim 7, wherein said image processing unit performs edge enhancement processing on pixels within a range subjected to the smoothing processing.

9. (Not Entered) ~~The image processing apparatus according to claim 6,~~ An image processing apparatus performing image processing on image data consisting of dot-matrixed pixels, output from an input device which generates the image data by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in a nonuniform densities and supplementing the image data

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by calculation to change the nonuniform densities to uniform densities, said apparatus comprising:

a color-blur pixel detection unit detecting a color blur pixel in said image data; and
an image processing unit performing image processing on pixels within a predetermined range
having said detected color blur pixel as a reference pixel, so as to reduce a color blur;
wherein said image processing unit performs smoothing processing on color difference
components, obtained by subtracting luminance components from element color
components of the pixels within the predetermined range having said color blur pixel as the
reference pixel, and returns the smoothing processed components to the initial element
color components; and

wherein when said image processing unit performs the smoothing processing on the pixels within the predetermined range having said detected color blur pixel as the reference pixel, if the size of a processing object image is large, said image processing unit increases the range subjected to the smoothing processing, while if the size of the image is small, said image processing unit reduces the range subjected to the smoothing processing.

10. (Not Entered) ~~The image processing apparatus according to claim 1,~~ An image processing apparatus performing image processing on image data consisting of dot-matrixed pixels, output from an input device which generates the image data by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in a nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said apparatus comprising:

a color-blur pixel detection unit detecting a color blur pixel in said image data; and
an image processing unit performing image processing on pixels within a predetermined range
having said detected color blur pixel as a reference pixel, so as to reduce a color blur;

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wherein said image processing unit replaces a color difference component having a central value of color difference components, obtained by subtracting luminance components from element color components of the pixels within the predetermined range having said color blur pixel as the reference pixel, with a color difference component of said color blur pixel, and returns the color difference components to the initial element color components.


21/11/03
11. (Not Entered) ~~The image processing apparatus according to claim 1,~~ An image processing apparatus performing image processing on image data consisting of dot-matrixed pixels, output from an input device which generates the image data by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in a nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said apparatus comprising:

a color-blur pixel detection unit detecting a color blur pixel in said image data; and
an image processing unit performing image processing on pixels within a predetermined range having said detected color blur pixel as a reference pixel, so as to reduce a color blur;

wherein said image processing unit determines whether or not said color blur pixel is an edge pixel, and if said image processing unit determines that said color blur pixel is an edge pixel, replaces a color difference component having a central value of color difference components, obtained by subtracting luminance components from element color components of the pixels within the predetermined range having said color blur pixel as the reference pixel, with a color difference component of said color blur pixel, while if said image processing unit determines that said color blur pixel is not an edge pixel, performs the smoothing processing on the color difference components, obtained by subtracting the luminance components from the element color components of the pixels within the predetermined range having said color blur pixel as a reference pixel, and returns the color difference components to the initial element color components.

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12. (Not Entered) An image processing apparatus performing image processing on image data consisting of dot-matrixed pixels, each of the dot-matrixed pixels having color element data from all the element colors, the dot-matrixed pixels being output from an input device which generates the image data by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said apparatus comprising:


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- a memory in which said image data being stored;
 - a color-blur pixel detection circuit accessing said memory and detecting a position of a color blur pixel based on the difference between a pixel of interest and its peripheral pixel while sequentially moving the pixel of interest; and
 - a color-blur reduction processing circuit reading data of pixels, each of the pixels having data from all the element colors, the pixels being within a predetermined range having the pixel of interest, detected as the color blur pixel, as a reference pixel, then performing calculation to reduce a color blur, and updating data of the pixel of interest stored in said memory with calculated data.

13. (Not Entered) An image processing method for performing image processing on image data consisting of dot-matrixed pixels, each of the dot-matrixed pixels having color element data from all the element colors, the dot-matrixed pixels being output from an input device which generates the image data by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said method comprising the steps of:

- detecting a color blur pixel in said image data; and

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performing image processing on pixels, each of the pixels having data from all the element colors, the pixels being within a predetermined range having said color blur pixel as a reference pixel so as to reduce a color blur.

 14. (Not Entered) A medium containing an image processing control program for an image processing apparatus performing image processing on image data consisting of dot-matrixed pixels, each of the dot-matrixed pixels having color element data from all the element colors, the dot-matrixed pixels being output from an input device which generates the image data by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said program executes image processing comprising:

detecting a color blur pixel in said image data; and

performing image processing on pixels, each of the pixels having data from all the element colors, the pixels being within a predetermined range having said color blur pixel as a reference pixel so as to reduce a color blur.
